

### Abstract

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A method for inhibiting and/or ameliorating the occurrence of diseases associated  
5 with reactive oxygen species, reactive nitrogen species, radicals and/or non-radicals in a  
subject whereby a subject is administered a carotenoid structural analog, either alone or  
in combination with another carotenoid analog, or co-antioxidant formulation. The  
analog or analog combination is administered such that the subject's risk of experiencing  
diseases associated with reactive oxygen species, reactive nitrogen species, radicals  
10 and/or non-radicals may be thereby reduced. The analog or analog combination may be  
administered to a subject for the inhibition and/or amelioration of ischemia-reperfusion  
injury, ~~The analog or analog combination may be administered to a subject for the~~  
~~inhibition and/or amelioration of liver disease. The analog or analog combination may be~~  
~~administered to a subject for the inhibition and/or amelioration of cancer. The analog or~~  
15 ~~analog combination may be administered to a subject for the inhibition and/or~~  
~~amelioration of cardiac arrhythmia and/or sudden cardiac death.~~ The analog or analog  
combination may be administered to a subject for the inhibition and/or amelioration of  
any disease that involves production of reactive oxygen species, reactive nitrogen  
species, radicals and/or non-radicals. In one embodiment, a water-soluble and/or water-  
20 dispersible astaxanthin analog is particularly effective. This invention further includes  
pharmaceutical compositions comprising structural carotenoid analogs either alone or in  
combination.

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